UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

APR 27 2011

CERTIFIED MAIL: RETURN RECEIPT REQUESTED
GENERAL NOTICE LETTER AND 104(E) INFORMATION REQUEST
URGENT LEGAL MATTER - PROMPT REPLY NECESSARY

David S. Sienko
Vice President and General Counsel
Hecla Mining Company
6500 N. Mineral Drive
Coeur d'Alene, ID 83815

633630

Re: Johnny M Mine Area Superfund Site, near San Mateo, McKinley County, New Mexico
SSID A6AH

Dear Mr. Sienko:

The U.S. Environmental Protection Agency (EPA) is responsible for responding to the release or threat of release of hazardous substances, pollutants or contaminants into the environment under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as the Superfund law. The EPA has documented that such a release has occurred at the Johnny M Mine Area Superfund Site (Site) located west of San Mateo, McKinley County, New Mexico. The EPA has spent, and is considering spending, public funds to investigate and control releases of hazardous substances or potential releases of hazardous substances at the Site. Based on information available, EPA has determined that Hecla Mining Company may be responsible under CERCLA for cleanup of the Site or costs EPA has incurred in cleaning up the Site.

Site Background

The Site is comprised of a former uranium mine and an impacted residential property immediately to the west of the mine. The residential property also includes a small business comprised of livestock. Records EPA has in its possession indicate the mine produced uranium ore from 1972 through 1982. Beginning in 1977, the mine operated under a Radioactive Material License issued by the New Mexico Environmental Improvement Agency to Ranchers Exploration and Development Corporation. This license allowed the mine to receive mill waste to backfill mine stopes. Two storage areas adjacent to the mine were used to store the mill waste before injection into the mine. The Nuclear Regulatory Commission (NRC) took over licensing of the mine in 1986. In 1993, NRC terminated their Source Material License after Hecla Mining Company, the successor to Ranchers Exploration and Development, completed reclamation under the requirements of the license.

Explanation of Potential Liability

Under CERCLA, specifically Sections 106(a) and 107(a), potentially responsible parties (PRPs) may be required to perform cleanup actions to protect the public health, welfare, or the

environment. PRPs may also be responsible for costs incurred by EPA in cleaning up the Site, unless the PRP can show divisibility of harm or any of the statutory defenses. PRPs include current and former owners and operators of a Site, as well as persons who arranged for treatment and/or disposal of any hazardous substances found at the site, and persons who accepted hazardous substances for transport and selected the site to which the hazardous substances were delivered.

Based on the information collected, EPA believes that Hecla Mining Company may be liable under Section 107(a) of CERCLA with respect to the Site, as a prior operator of the Johnny M Mine. Enclosure 1 includes records obtained from NRC, showing operation and reclamation of the Johnny M Mine by Hecla Mining Company and its predecessor, Ranchers Exploration and Development.

Information to Assist You

Within the next six months, EPA Region 6 expects the following activities to be completed on the residential property and adjacent areas as necessary to define and respond to the areal extent of contamination:

1) Immediately relocate resident and his livestock to acceptable accommodations until items 2 through 4, below, are accomplished and verified by EPA.

2) Remove all radiologically contaminated soil on the property to a level that does not exceed 5 pCi/g of Radon-226 in the top 15 cm of soil and 15 pCi/g of Radon-226 below 15 cm of soil OR the average radiological exposure across the surface of the property does not exceed an annual exposure rate of 15 mrem.

3) Take abatement actions on all buildings on the property to ensure that Radon-222 levels do not exceed 4 pCi/l.

4) Install and maintain an appropriate filtration system on the domestic water well on the property to remove excess radiological contaminants to a level below EPA and NMED safe drinking water standards (MCLs).

5) Characterize and abate releases outside the Jackson property to prevent recontamination of the surface and subsurface on the Jackson Ranch.

6) Conduct all actions in compliance with all State and Federal laws and regulations.

As you are aware, Pam Travis, Senior Assistant Regional Counsel, provided Hecla Mining Company with maps and sampling results that provide preliminary documentation in support of a removal action at the Site. The EPA is in the process of developing an Action Memorandum and Scope of Work to further document and explain the steps to be taken as part of the removal action. These documents, along with a summary of EPA response costs incurred to date, will be sent to you in the coming weeks. At that time, EPA will seek Hecla Mining Company's agreement to undertake response measures in connection with the Site. The EPA has completed item 1 above. Preliminary estimates of relocation expenses for the residence and

business located on the Jackson Ranch, including contractor support, indicate that the cost will be approximately $150,000 for 6 months.

Information Request

The EPA seeks cooperation from Hecla in providing information and documents relating to the Site. Obtained information will aid the EPA in its investigation of the release or threat of release of certain hazardous substances, pollutants or contaminants at this Site. Hecla's response will also help EPA develop a better understanding of activities that occurred at the Site.

CERCLA Section 104(e), 42 U.S.C. § 9604(e), gives EPA the authority to require Hecla to respond to this information request (see Enclosure 2). We encourage your company to give this matter its full attention, and ***we respectfully request Hecla respond to this request for information within thirty (30) days of its receipt of this letter.*** You may designate another official of Hecla with the requisite authority to respond on behalf of the company. However, failure to respond to this information request may result in EPA seeking penalties of up to $37,500 per day of violation. In addition, furnishing false, fictitious or fraudulent statements or representations is subject to criminal penalty under 18 U.S.C. § 1001.

Please give these matters your immediate attention and consider consulting with an attorney. If you have any legal questions, please contact Ms. Travis at (214) 665-8056. If you have any technical questions about the Site, you may contact Mr. Warren Zehner, Federal On-Scene Coordinator, at (214) 789-1585, or Mr. Jon Rinehart, Federal On-Scene Coordinator, at (214) 789-1713. If you have any other questions regarding this letter, please contact Mr. Kevin Shade, Enforcement Officer at 214-665-2708. Thank you for your prompt attention to this matter.

Sincerely,

Pamela Phillips, Acting

Samuel Coleman, P.E.
Director
Superfund Division

Enclosures (3)

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Travis 6RC-S 04/15/11
Peycke 6RC-S 04/22/11
Johnson 6SF-TE 4/14/11
Stenger 6SF-T 04/27/11
R Wooster 04/19/11 R Wooster 6SF-T

ENCLOSURE 1

JOHNNY M MINE AREA SUPERFUND SITE

Records Indicating Operation by Ranchers Exploration and Development and/or Hecla Mining Company

RANCHERS EXPLORATION AND DEVELOPMENT CORPORATION
Box 6217 / 1776 Montano Road, N.W. / Albuquerque, New Mexico 87107 / Telephone (505) 344-3542

May 31, 1977

Water Quality Division
Environmental Improvement Agency
P. O. Box 2348
Santa Fe, New Mexico 87501

Re: Johnny M Mine, Secs. 7 & 18, T. 13 N., R. 8 W., McKinley County, N.M.

Gentlemen:

Notice is hereby given of an urgent intent to discharge mine tailings in slurry form underground to prevent already-worked sections of a mine from caving in and affecting the Dakota water above it. Details are as follows:

1. Ranchers Exploration and Development Corporation.
2. 1776 Montano Road NW, Albuquerque, N. M. 87107.
3. Johnny M Mine near San Mateo, New Mexico.
4. Prevention of the caving of mine workings require the introduction of sand support in the stopes as mining progresses. Mining is being carried out in the Poison Canyon and Westwater members which lie below the Dakota sand. The Dakota sand, in the area of the mine, is water-bearing, and caving in the ore zones below could result in the Dakota water entering the mine in quantities, which would result in the loss of the mine.

   It is proposed to use mill tails from the Kerr-McGee milling operation in the Ambrosia Lake area as a fill material. Kerr-McGee uses an acid leach process in the milling. The mill tails material will be slurried with mine discharge water and transported underground to the mining areas, where it will be placed behind permiable "fences" as support. The analysis of the slurry material is unknown at the present time, but Ranchers will undertake to obtain such analysis within thirty (30) days of starting to use the system.

5. There will be no additional discharge from the mine, since the water used to slurry the tails will be mine discharge water. The slurried material will not be contained by impermiable barriers; it is judged there will be no effect on the natural ground waters at the mining level as a consequence.

It is imperative that this system be put into operation at once to avoid the possible loss of the mine due to flooding. Should any additional information be required, please advise Mr. Dewel, who is delivering this letter, or call the undersigned at 344-3542.

As a final matter, our providing this notice of intent to discharge shall in no way be considered as a waiver of our position concerning the present appeal of groundwater regulations, and this notice shall be without prejudice to any rights we may have.

Sincerely,

Paul A. Matthews
Vice President
Operations

PAM:bbh
cc: Jim Cleveland, Kerr-McGee

bcc: A. Buchanan
R. Kaufman
J. Deuel ✓
R. Campbell

SAND FILL PROPOSAL

at

JOHNNY M MINE, McKINLEY COUNTY, NEW MEXICO

by

Walter R. Ashwill
Chief Mining Geologist
Ranchers Exploration and Development Corporation

June, 1977

Addendum to Ranchers
Letter of May 31, 1977

In compliance with article 1-201, NOTICE OF INTENT TO DISCHARGE, sub-paragraph B.4, of the Water Quality Control Commission regulations as amended January 11, 1977, the following "estimate of concentration of water contaminants in the discharge" is hereby provided:

1.	Gross α	unk	pCi/l
2.	Ra-226	30	pCi/l
3.	U-nat	0.2	mg/l
4.	Se	<0.01	mg/l
5.	Mo	0.03	mg/l
6.	As	0.02	mg/l
7.	V	unk	mg/l
8.	Cd	<0.001	mg/l
9.	CN	0.2	mg/l
10.	Zn	<0.01	mg/l
11.	Fe	<0.001	mg/l
12.	Na	unk	mg/l
13.	Mn	0.001	mg/l
14.	SO_4	220	mg/l
15.	Cl	8.0	mg/l
16.	Kjeldahl N	3.8	mg/l
17.	NO_3 as N	0.2	mg/l
18	pH	8	mg/l

Submitted

J. K. Deneł

Date

77/6/1

SAND FILL PROPOSAL
at
JOHNNY M MINE, McKINLEY COUNTY, NEW MEXICO

Introduction

This report, to be included with other data requested by the New Mexico Environmental Improvement Agency, describes geologic conditions pertaining to Ranchers' proposed backfill project in the Johnny M Mine.

Location

The Johnny M Mine is located in the Grants Mineral Belt of McKinley County, New Mexico, and the property includes all of Section 7 and the East One-half of Section 18, Township 13 North, Range 8 West, N.M.P.M.

General Geology of the District

The attached stratigraphic chart shows the age, thickness and lithologic characteristics of those geologic formations in proximity to the host sands of the Johnny M Mine.

The host formation for the Johnny M ores is the Morrison formation of Jurassic age. Underlying the Morrison formation is the Bluff sandstone of Jurassic age, and overlying the Morrison formation is the Dakota sandstone of Cretaceous age. Other important formations at the property not shown on the attached chart include the Mancos shale, which immediately overlies the Dakota formation, and the Gallup sandstone, which overlies the Mancos shale and outcrops near the shaft collar. Both of these formations are of Cretaceous age. Details of the host formation follow.

Local Geology of the Morrison Formation

As shown in the attached chart, the Morrison formation consists of three Members in this area. The upper Member consists dominantly of green bentonitic shales and is termed the Brushy Basin Member. The middle unit contains alternating shale and sandstone beds and is termed the Westwater Member. The lower unit consists dominantly of red shales and has been named the Recapture Member.

Ore at the Johnny M Mine occurs only in sandstone host rock and is limited to two general horizons. The upper host sand is locally termed the Poison Canyon Tongue of the Westwater member of the Morrison formation. It occurs in the Brushy Basin shale member about 25 feet above the main Westwater member. The lower ore occurs near the top of the Westwater member.

Answers to specific questions concerning water flow patterns and rates through the back-filled areas and acquifers above and below the sand-filled stopes will be given below.

Phreatic Water

The host sands were water-saturated when encountered underground but were drained via drain holes and mine workings. The drain holes ran water for six to ten weeks. Once drained, the sands do not produce additional water, suggesting that the sand units are not connected to either vadose or phreatic water sources. Since the ore bodies are below the water table but do not recharge, impervious conditions must surround the ore sands. With no permeable connection with either meteoric water sources or phreatic water sources, there will be no ground water flow through the back-filled stopes. Therefore, there will be no flow pattern or rates to determine.

Underground Leaching

Ranchers has no plans to recirculate mine waters through the back-filled material to leach uranium from the stopes. Our plan is to use a slurry system to emplace sand into dry open stopes. Once the filling has been completed and the fill-water has drained, no additional water will be directed onto the sandfill.

Overlying and Underlying Rock Types

The transmissivity of rock units above and below the Westwater Member (ore host unit) is essentially nil. The Brushy Basin Member which overlies the Westwater is composed of mostly greenish-colored mudstones that contain bentonitic clays. When this unit is encountered in mine workings, it is dry. When it is exposed to water, swelling occurs. Due to the swelling characteristic, the Brushy Basin shale tends to self-seal any fracture or drill hole that permits water contact. Sandstone lenses are present within the Brushy Basin Member but they are encased within the impermeable shale.

The underlying Recapture shale is composed of siltstone and mudstone beds that are low in permeability. The unit does not carry ore and it has not been encountered in the Johnny M stopes and haulageways.

Neither the Brushy Basin nor the Recapture Member can be considered acquifers, since they are essentially dry. They are composed of shales, mudstones and siltstones with negligible or low transmissivity characteristics.

RANCHERS EXPLORATION AND DEVELOPMENT CORPORATION
Box 6217 / 1776 Montano Road, N.W. / Albuquerque, New Mexico 87197
Telephone (505) 344-3542 / TWX 910 989 1686 RANC EXPLO ABQ

January 14, 1982

New Mexico Environmental Improvement Division
P. O. Box 968
Santa Fe, NM 87503

ATTN: Tom Christiansen, Environmental Scientist
Randall T. Hicks, Water Resource Specialist

NOTICE OF INTENT TO CEASE OPERATIONS AND TO VACATE PREMISES

Pursuant to Section 4-460 of the EID Radiation Protection regulations, and pursuant to our approved water discharge plan, please be formally advised that Ranchers will soon cease mining at the Johnny M uranium mine. Our expected cessation date is mid-February 1982. We will have personnel on the property for some time after that for purposes of cleanup and salvage.

As we discussed at our meeting on December 4, 1981, this letter is intended to satisfy the requirements of both the radioactive materials and water discharge sections of the EID.

Our cleanup programs consists of the following planned actions which will commence as soon as mining ceases:

1. Remove and bury debris
   2 men, 3 weeks with loader & truck
   (120 hours)
2. Partially fill ponds with waste rock and solid wastes
   2 men, 4 weeks with loader & truck
   (160 hours)
3. Reclaim south bore hole area
   (60 hours grader)
   (48 hours #1)
4. Reconstruct water diversion main yard to old arroyo
   (40 hours)
5. Undercut toe of waste pile, contour waste, drift borrow from toe and berms over waste and pond areas
   (120 hours)

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Table 1. *Sequence of stratigraphic units containing uranium deposits in the Ambrosia Lake-Laguna area, New Mexico.*

System	Age	Formation	Thickness (feet)	Character and distribution	Uranium deposits
Cretaceous	Early and Late Cretaceous	Dakota Sandstone	<5-125	Tan to gray, medium-grained quartz sandstone, some interbedded carbonaceous shale and local coal lenses. Local conglomerate-filled scours at base as much as 25 feet deep.	Scattered small deposits, generally near base and closely related to carbonaceous material. A few in Ambrosia Lake district have yielded ore.
		Unconformity			
Jurassic	Late Jurassic	Morrison Formation	0-600	Brushy Basin Member: mostly greenish-gray mudstone and local thick arkosic sandstone units. Contains Poison Canyon sandstone of economic usage near base in Ambrosia Lake district and Jackpile sandstone of economic usage at top in Laguna district. Member is 20-300 feet thick and generally thickens eastward and northward from Ambrosia Lake district.	Sandstone lenses contain many deposits. Very large deposits occur in Jackpile sandstone in Laguna district and large ones occur in Poison Canyon sandstone and other sandstone units in Ambrosia Lake district.
				Westwater Canyon Member: light-brown to gray, poorly sorted, arkosic sandstone and some interbedded gray mudstone. Intertongues with Brushy Basin Member and thins from maximum of about 300 feet in Ambrosia Lake district to less than 50 feet in the Laguna district where locally absent.	Contains many large deposits in Ambrosia Lake district.
				Recapture Member: distinctive alternating beds of gray sandstone and grayish-red siltstone or mudstone. Beds are a foot to several feet thick. Contact with Bluff Sandstone generally sharp, but intertongues with Westwater Canyon Member. Recapture is less than 50 to more than 200 feet thick.	Contains a few small deposits. One in Laguna district has yielded ore.
		Bluff Sandstone	150-400	Pale-red to pale-brown, fine- to medium-grained sandstone. Forms massive cliffs. Upper part marked by thick sets of large-scale crossbeds; lower part grades down into smaller-scale sets of crossbeds and some flat beds.	Contains no deposits.
		Summerville Formation	90-200	Alternate beds of pale-brown, thin-bedded sandstone and reddish-brown mudstone or siltstone. Sandstone beds thicken in upper part and grade into overlying Bluff Sandstone; at base grades and intertongues with Todilto.	Contains scattered deposits at base, generally where underlying Todilto Limestone is mineralized.
		Todilto Limestone	0-85	Consists of upper gypsum-anhydrite member, exposed only in Laguna district, 0-75 feet thick; and lower limestone member, gray, laminated in lower part and more massive, contains interbedded siltstone in upper part, 5-35 feet thick.	Contains (mostly in Ambrosia Lake district) many small and some fairly large deposits in the limestone member.
		Entrada Sandstone	150-250	Consists of upper unit, 80-250 feet thick, of reddish-orange, fine-grained sandstone with thick sets of large-scale crossbeds and a medial unit, 10-85 feet thick, of red and gray siltstone. In the Laguna district, a lower sandstone unit, 0-50 feet thick, may belong in the Entrada or may be the Wingate Sandstone. Medial unit probably unconformable on Wingate Sandstone in Ambrosia Lake district; lower sandstone unit unconformable on Chinle Formation in Laguna district.	Contains scattered small deposits at top of formation, generally where overlying Todilto Limestone is mineralized. Some have yielded ore.
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6. Grade main yards to remove radioactive material. Dispose of to ponds.
   (60 hours grader)
   (24 hours #1)
7. Drift banks around main yard and buildings to cover foundations & yard.
   (120 hours)
8. Plug main shaft below Dakota and surface.
   Plug vent shafts at surface.
   5 men, 8 hours
   40 yards concrete
   Re-bar and forms
9. Remove and dispose of drain line on E½, S-18
   (40 hours #1)
10. Restore drainage both sections and rework disturbed areas.
    (40 hours D-8)
    (20 hours grader)
11. Re-seed and harrow S-7 and E½ S-18
    (60 hours tractor & harrow)
    Seed and labor
12. Rebuild fences
13. Removal and disposal of water discharge line
    2 men, 2 weeks with loader & truck
    (80 hours)
14. Ore pad(s) - grading and sub-grading with waste disposal
    (60 hours grader)
    (24 hours #1)
15. Scarify road and drift berm, grade along pipeline, drift material over ore pad(s). Remove cattle guard.
    (80 hours grader)
    (24 hours #1)
16. Seed and harrow W½ S-18
    (40 hours tractor & harrow)

In addition, the remaining sandfill tailings will be used for backfill prior to shutdown. The settling ponds will be used for disposal of certain contaminated material and covered. The ore pads and sandfill storage areas will be scraped for all economincally shippable material and at least an additional three inches. The ore pads and sandfill storage areas will then be covered, contoured with available stockpiled topsoil and then reseeded.

It is my understanding that you will comment on the above described plans and make an inspection of the property when cleanup is complete. It is also my understanding that we are operating under Radiation Protection Regulation 4-460 (April 21, 1980) relating to "Vacating Premises".

As a final matter, by Thomas Baca's letter of December 8, 1981, the EID has formally requested permission for an EID groundwater study at the Johnny M Mine. In principle, we have no objection to allowing the EID to perform such a study on the north vent hole only, and permission is granted for the north vent hole, subject to the following restrictions, limitations and conditions:

1. Ranchers does not own any of the subject property and its rights to access will soon terminate. Ranchers makes no representations that the land owners will allow access to the EID for any purpose.
2. EID must assume full liability for the acts or omissions of its employees or agents for any damage caused by them while on the property in connection with the proposed study.
3. The EID waives forever the use of any data collected during the proposed study against Ranchers or its successors or assigns for any purpose whatsoever without the prior written approval of Ranchers.
4. Such access as Ranchers is able to provide will be limited to the north vent hole, where 8" and 3" diameter conduit will be left in place and available for EID use, subject to 1 above. The shaft and other vent hole will be plugged and sealed by Ranchers.

As always, we will be happy to meet with your staff to discuss the details of the study and to answer any questions regarding the cleanup plan. We would also appreciate your comments on the cleanup procedures as soon as possible.

Very truly yours,

RANCHERS EXPLORATION AND
DEVELOPMENT CORPORATION

James M. Rosel
Assistant Vice President
and Assistant Secretary

JMR/nlp

STATE OF NEW MEXICO
ENVIRONMENT department
ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020
Steven Asher, Director

TONEY ANAYA
GOVERNOR

ROBERT McNEILL
SECRETARY

ROBERT L. LOVATO, M.A.P.A.
DEPUTY SECRETARY

JOSEPH F. JOHNSON
DEPUTY SECRETARY

MEMORANDUM

TO: Felix Miera, Program Manager, Uranium Licensing Section

FROM: Sam Simpson, Uranium Licensing Section

DATE: January 31, 1984

SUBJECT: Reclamation of the Johnny M. Mine Site

This memo addresses reclamation activities by Ranchers Exploration and Development Corporation, as relates to the EID licensed tailing backfill operations at the Johnny M. Mine project.

a. Background

Ranchers Exploration and Development Corp. applied to the EID for a radioactive material license (RML) on June 17, 1977. The purpose for which the RML was requested involved the use of uranium mill tailings, acquire from the Kerr McGee Corp. tailings impoundment area, to backfill evacuated stopes in Ranchers Johnny M. Mine at San Mateo, N.M. This innovation process is employed to prevent caving and to reduce the vulnerability of possible breaks in the integrity of the Dakota aquifer located above the mine. The operation consisted of transporting an estimated 8,000 tons of tailings per month from Kerr McGee to the Johnny M. Mine site with interim tailings storage being accomplished at both the north and south bore hole underground injection sites, which essentially consisted of approximate one acre site at each location. Sand or mill tailings were slurried with water to about 50% solids by weight and then pumped underground to the stopes or open areas for backfill.

The Radioactive Material License (NM-RED-MB-00) was issued by the EID on June 21, 1977, with an expiration date of February 28, 1978. Thirteen amendments to the original license have been granted by the EID for a variety of reasons. The license amendments beginning on February 28, 1978, have extended the expiration date because of operational and final reclamation delays experienced by Ranchers Exploration and Development Corp. A final termination report was

submitted by Ranchers to the EID on August 23, 1983. EID staff and field personnel were involved in gamma surveys during each distinct phase of the reclamation and according to Ranchers (page 1, Gamma Surveys, Termination Report,) each phase of the reclamation plan was conducted with the prior knowledge and approval of the EID (Reference Attachment 1). With the high turnover rate of Radiation Protection Bureau personnel, at least five previous Environmental Scientists from the RPB managed this endeavor, from my position it is impossible to determine the complete accuracy of this statement. The last amendment to the license was issued on September 30, 1983, which extended the expiration date for 180 days, to expire on March 31, 1984. This extension was necessary for the EID to conduct a site verification inspection and evaluate data acquired from this inspection.

b. Reclamation Standards Provided to Ranchers

On June 22, 1982, the EID provided Ranchers with reclamation standards for the two small, approximately one acre each, tailing surface storage areas. Ranchers in their May 11, 1982 letter to EID explicitly states, "that any EID jurisdiction over cleanup or decontamination at the Johnny M. Mine relates only to two relatively small surface areas". At a conference conducted on May 7, 1982, at the Crown Building, the EID staff agreed that our jurisdiction indeed only pertained to the two licensed storage areas.

The reclamation standards provided by EID to Ranchers (EID June 22, 1982 letter) for satisfactory cleanup measures essentially followed the Federal 10 CFR 20 standards, commonly referred to as the 500 millirem rule. This equates to 57 microroentgens p/hr plus background (measured to be approximately 10 microroentgens p/hr). Therefore, gamma radioactivity levels, taken in the air at 1 meter, shall not exceed 67 microroentgens p/hr at the backfill storage areas. Provisions were established in this EID letter to enforce the ALARA principal by delineating 25 microroentgens per hour as a target level that the EID believed Ranchers could achieve in most cases with their suggested program of scraping, clean up, and cover.

Since all situations cannot be rigidly covered by the regulations, provisions in accordance with the NMRPR, Part 4-150B, were provided for Ranchers to request exemptions. The Division made a committment to approve the exemptions requested only if it was demonstrated that Ranchers new proposals are not likely to cause any individual to receive a dose to the whole body in any period of one calendar year in excess of .5 rem (500 mrem above background).

c. Reclamation Activities

1. A July 19, 1982 EID memo, contains a status report on a site visit by EID staff personnel. At the time of this site visit,

(July 15, 1982) the south bore hole had been scraped and only has a few hot spots left. These spots would be covered and the area graded. The north bore hole required extensive scraping and covering, however, gamma readings were only slightly above the limits specified above.

2. On September 1, 1982, three members of the EID staff visited the Johnny M. Mine site and collected composite soil samples to assist in determination of background radiation levels at the project site. Radiochemical analysis of the soil samples was performed by Eberline Corp. as relates to Ra-226. The results at the no bore hole range from 45 ±14 to 62 ±19 pCi/g/dry and at the south bore hole 24 ±7 to 68 ±20 pCi/g/dry. These values are not representative of the region. In 1981, soil samples collected from background areas that included San Mateo, Crownpoint, and Marquez had Ra-226 mean values of 0.71, 0.65, and 0.64 pCi/g respectively.

   Radon measurements taken at the site September 1-3, 1982, reflect after corrections, a probable annual average at the north bore hole of .41 ±.16 pCi/l and the south bore hole of .42 ±.24 pCi/l.

3. Ranchers termination report indicates that the initial clean up surveys (5/82) at the south bore hole indicate a mean gamma in air reading of 47 μr/hr. The second clean up effort (6/16/82) elevated gamma readings to 60 μr/hr p/hr, while the final clean up effort (8/17/82) "succeeded" only in raising gamma radioactivity to a level of 183 μr/hr.

   Reclamation activities at the north bore hole essentially proved fruitless. From the initial survey (5/82) of 158 μr/hr the final survey revealed a reading of 153 μr/hr.

4. The final EID site verification survey conducted on September 14, 1985, shown in Attachment 2, ascertained that the average gamma intensity readings, using a PRM-7 meter @ 1 meter in the air, were 228 μr/hr ±174 and 151 μr/hr ±60 at the north and south bore hole respectively.

d. Measurements

The EID survey team on September 14, 1985, took measurements of direct gamma-ray exposure rates one meter above the ground using an Eberline PRM-7 portable survey instrument. Measurements were made at the north and south bore hole former tailings storage areas and at adjacent borrow soil areas at varying intervals because of the nature of the site terrain. Measurements were made at approximate 50' intervals with results indicated in Attachment 2.

The highest exposure rates off the north tailings storage pads were 1000 μr/hr about 30' due east of the north storage pad eastern perimeter. The lowest exposure rate was 60 μr/hr along the northeast quadrant. The south bore hole sand fill storage areas highest exposure measurement recorded was 400 μr/hr, approximately 50' east of the storage areas. Thirteen measurements at the north bore hole were taken with a mean of 228 ±174 μr/hr. A total of 29 measurements taken at south bore hole sand fill storage area with a mean of 151 ±60 μr/hr.

e. Problem

The acquisition of cover material from adjacent borrow material zones undoubtedly generated the elevated levels of radioactivity at the storage areas. Measurements as high as 1000 μr/hr were observed along the face of the canyon in the vicinity of where the cover material was acquired. These elevated readings can be attributed to natural outcropping or possibly from some earlier deposited mine spoils. The "background" levels of Ra-226 content in the soil is quite elevated from natural background levels experienced in other locales in the region.

Spot gamma measurements taken outside the licensed zones reveal readings in the 300-400 μr/hr range within a few feet of the tailings storage pads and in the main mine yard complex. Remember these zones are outside EID's regulatory function and represent a rather large land mass related to the small areas licensed by EID. To further complicate matters, surface water drainage patterns at the north bore hole flows down the canyon walls, these soils contain elevated levels of radioactivity, and over the former north tailing storage site.

Revegetation efforts in the licensed zones were in the most part unsuccessful. Species observed were those typical to disturbed habitats and included Bottle Brush Squirrel Tail, Belcedere Summer Cypress and Russian Thistle.

f. Summary

Ranchers position basically is one whereby their personnel with the knowledge and approval of EID attempted a good faith reclamation effort to adhere to standards provided by this agency. The final reclamation activity, after considerable expenditures of manpower and equipment resources, did not accomplish its goal. In fact virtually no progress was made at the north bore hole, a 158 μr/hr to 153 μr/hr reduction, and the south bore hole storage area was degraded by almost a factor of four (47 μr/hr after scraping to 183 μr/hr final clean-up). In my opinion the basic mistake was to acquire conveniently located

borrow material, which contained enhanced radioactivity attributed to outcropping along the canyon wall and possibly some earlier deposited mine spoils, and use this material as cover. In any case, both Ranchers and EID gamma surveys show the standard of 67 ur/hr having been exceeded by a considerable margin at both sites as noted below:

1. North Bore Hole: Ranchers 153 μr/hr; EID 228 μr/hr.
2. South Bore Hole: Ranchers 183 μr/hr; EID 151 μr/hr.

g. Other Factors

1. A May 4, 1982, letter from Randy Hicks (Groundwater Section) to Mrs. Lee and Mr. Sonny Marquez, ranch owners, stipulated that the State was interested in monitoring ground water because of employment of mine stope backfilling with uranium mill tailings. Since substantial amounts of uranium mill tailings are deposited in the mined out portions of the underground mine, the State desired to study the effects of this practice on the water quality at the 1500 foot level.

   My telephone discussion with Mr. Hicks (former EID employee) on December 27, 1983, revealed that his first attempt to take water samples was unsuccessful, lost three bailers and there was no evidence the aquifer had recharged. To his knowledge no further efforts were made to acquire water samples and ascertain the quality of the groundwater. Only the north bore hole is still open to the 1500' depth while the south bore hole has been cemented. There is a possibility that the north bore hole will be plugged, therefore this might be an ideal time to attempt resampling of groundwater.

2. The surface water flow drainage pattern, at the north bore hole, is down the south face of the canyon wall and flows over the former tailings storage pad. Elevated levels of radioactivity from outcroppings coupled with surface drainage will eventually erode away any subsequently replaced cover material and replace it with soils elevated in residual radioactivity.

3. The record does not reflect any detailed pre-operational surveys which is understandable since EID licensing activities for backfilling commenced quite a few years after the mining operation was started by Ranchers. In other words, the area was already disturbed and ascertaining background radiation levels at the mine complex would have been extremely difficult. Therefore, background levels of Ra-226 in the soil and gamma air surveys are not available. The EID personnel determined gamma background levels by taking air surveys in undisturbed areas outside the mining complex. A comprehensive preoperational survey of the site might have revealed highly elevated levels of radioactivity from the outcropping and therefore it is possible that the stan-

dards for clean-up were not realistically determined based on final termination inspection findings.

4. There is no coordinated approach for reclamation at a mine site unless it is located on Indian land. The basic dilemma is the piece-meal approach involving reclamation. In this instance, the EID has limited jurisdiction and has authority only to enforce compliance on an estimated two acres in a relative large mining complex involving hundreds of acres. The whole process is seriously flawed. There is an urgent need to have joint coordinated efforts across jurisdictional regulatory lines to enforce compliance with radioactive clean-up standards as it relates to the entire project environs. Anything less is a rather foolhardy approach. The inevitable result of current policies at best only guarantees at least postage stamp clean up of relatively elevated zones of radioactivity while allowing surrounding terrain to exist with elevated levels of residual radiation.

h. Recommendation

Unless some other State or Federal agency can enforce radiological cleanup to standards to meet the .5 rem guidelines throughout the mine complex, to insist on a reclamation effort to clean-up just a small plot of land does not appear warranted or justified. The economic resources devoted to such a project would virtually be wasted because within a few years windblown and water carried soils with elevated levels of radioactivity, will obscure any progress accomplished as related to new cover material spread over the licensed zones to reduce radioactivity levels.

The criteria for land decontamination have the objective of reducing residual gamma radiation levels which are as low as reasonably achievable (ALARA). However, topographic and economic consideration frequently preclude complete decontamination. Recommend under the circumstances that no further scraping or cover material be placed over the previous uranium tailings sand fill storage pads. The revegetation efforts in the reclaimed area were for the most part unsuccessful. Therefore, the former north and south tailings sand fill area should be disced and reseeded with an appropriate grass seed native to that region.

Once this revegetation measure is completed recommend termination of the Radioactive Material License.

SS/mc

TONEY ANAYA
GOVERNOR

DENISE D. FORT
DIRECTOR

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

M E M O R A N D U M

TO: Felix Miera, Program Manager
Uranium Licensing Section

FROM: JM Jere Millard, Radiation Specialist
Radiation Protection Bureau

DATE: March 14, 1985

SUBJECT: Johnny M. Mine Site Reclamation

This memo evaluates the effectiveness of completed reclamation activities undertaken at the Johnny M. Mine Site and presents recommendations for further action.

Attachment 1. shows the location of eight soil samples taken at both the north and south vent holes used during the licensed backfilling operation by Ranchers Exploration and Development Corporation. The following composite soil samples were taken to evaluate the radiological content of background soil materials used for cover and the cover materials themselves. External exposure rate readings at one meter from the ground surface were also taken at each composite soil sample location.

SAMPLE NUMBER	uR/h	DESCRIPTION
North Vent Hole		
1.	30	Native Mancos Shale
2.	900	Soil from Non-Licensed Area
3.	19	Native Mancos Shale
4.	13	Native Sandstone
5.	380	Cover Material
South Vent Hole		
6.	14	Native Mancos Shale
7.	14	Soil From Borrow Pit
8.	470	Cover Material

Attachments 2 and 3 summarize the gross alpha, gross beta and specific radionuclide concentrations in the eight soil samples collected. This data confirms that reclamation efforts to date have not been successful in isolating remaining backfill materials. Samples of cover materials (#5, 8) showed relatively high concentrations of radionuclides but were depleted in U-238 and U-234. Sample #2 from the non-licensed area also showed relatively high concentrations but depleted uranium. All three samples clearly show the presence of exposed backfill materials. Attachment 4. showing a gamma spectum from samples #1 and #2, clearly demonstrates the differences in the levels of activity and the depleted uranium in sample #2 for peaks at 320 Kev and 460 Kev, when compared to a standard pitchblend sample which has all U-238 decay chain nuclides in secular equilibrium.

It has been previously stated that "the acquisition of cover materials from adjacent borrow material zones undoubtedly generated the elevated levels of radioactivity at the storage areas" (memo from Sam Simpson to Felix Miera, January 24, 1984). However, samples from background soils used for cover materials #1, 3, 6, and 7) showed concentrations from 1-3 pCi/g for all radionuclides. Sample #4 from a nearby sandstone formation also had relatively low concentrations of radionuclides (4-5 pCi/g). Therefore, it is clear that the use of these earthen materials for cover, could not have resulted in the observed elevated gamma exposure rates at both licensed areas following reclamation.

External exposure rate data presented in the Johnny M. Mine Termination report, shows no significant change in mean uR/h levels through three separate phases of reclamation at the North Vent Hole. The mean level was 158 uR/h following the initial step by Ranchers when "all backfill material and debris were removed from the areas by loading and scraping." This level greatly exceeded the agreed upon target of 25 uR/h in accordance with the ALARA principle (Simpson to Miera memo, page 2 - reclamation standards provided to Ranchers). At the South Vent Hole, there was a significant increase in mean external exposure levels from the initial (47 uR/h) to final cleanup (183 uR/h). Since cover materials are very low in radionuclide concentrations and backfill materials have been found at the surface of both licensed areas, it must be assumed that the original backfill materials were never adequately removed or isolated. In addition, exposed backfill materials were left in non-licensed areas despite their close proximity to licensed areas.

The existing reclamation is inadequate in protecting the environment through the spread of radioactive contaminants and there currently exists a potential for excessive exposure to ionizing radiations as referenced to the 500 mrem/y whole-body standard (ICRP II, 10 CFR 20).

Additional on site reclamation may be feasible, however there is a great erosion potential at both sites and there is little additional cover material available nearby to successfully stabilize radioactive materials . It should be determined whether or not it is feasible to place any remaining

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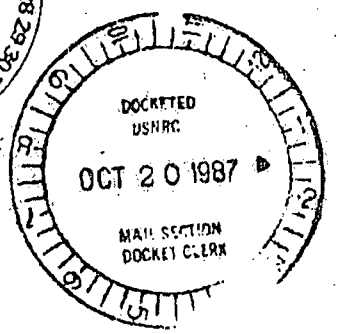
Hecla Mining Company

October 16, 1987



CERTIFIED MAIL --
RETURN RECEIPT REQUESTED

Mr. Harry J. Pettengill
U.S. Nuclear Regulatory Commission, Region IV
Uranium Recovery Field Office
P.O. Box 25325
Denver, Colorado 80225

RE: Johnny M Mine Work Plan

Dear Mr. Pettengill:

We are enclosing a document entitled "Work Plan for Site Surveys and Cleanup" with respect to the Johnny M Mine in McKinley County, New Mexico, pursuant to our agreement with you at our September 15 meeting at your offices. Performance of these tasks in a timely manner is subject to weather conditions and reasonable access. We are currently negotiating with attorneys representing the landowners of the property between N.M. state road 55-334 and the mine site for a right-of-way easement.

Please direct your response to Ms. Colleen D. Kelley, Senior Environmental Engineer, at Hecla's Coeur d'Alene office.

Yours truly,

HECLA MINING COMPANY

By _____
Harry M. Lane, Attorney

HML:ldr
Enclosure

9167239

88-0061

6500 Mineral Drive • Box C-8000 • Coeur d'Alene, Idaho 83814-1931 • (208) 769-4100 • TELEX 326476

materials in the mine shaft on site.

If on site reclamation is not feasible, then contaminated materials should be removed to another location. Only two possible sites exist for this approach, the existing Quivira Mining Company tailings pile where these materials originated and the soon to be stabilized Ambrosia Lake inactive pile. If no monies are available from Ranchers then the Ranchers site may qualify as an EPA Superfund site. However, since both sites are currently licensed, they may be excluded from Superfund.

Since, past EID Staff did knowingly allow, approve and participate in the Ranchers reclamation activities, the present legal status of our position and therefore our constraints in pursuing additional reclamation on the part of the licensee must be evaluated. Before termination of the Ranchers radioactive materials license, the anticipated use and potential access by members of the general public must also be evaluated. Land use could be a controlling factor in determining the degree of stabilization or removal of licensed radioactive materials needed to adequately protect the public health. The ALARA principle must also be factored into final reclamation with potential land use in mind.

JM/cvg

encs.

cc. Ken Hargis, Chief, Radiation Protection Bureau
C. Traugh, Environmental Scientist, Milan Field Office

WORK PLAN FOR SITE SURVEYS AND CLEANUP
JOHNNY M MINE
HECLA MINING COMPANY

October 17, 1987

In accordance with commitments made during the meeting of September 15, 1987, between Hecla Mining Company and the USNRC concerning the Johnny M Mine site, this work plan has been prepared for review and approval by the NRC prior to its implementation by Hecla. The work plan covers the three activities or issues addressed by the commitment, namely:

A) A survey to delineate the areal extent and depth of soil contamination at the Johnny M tailings storage areas.

B) The methodology for determination of background radium levels in soil, including locations of background samples, to be used in the survey.

C) Candidate cleanup methods or approaches and post cleanup verification survey methodology.

Hecla personnel and consultants inspected the site on October 2, and both visual observations and gamma readings were made to delineate the areas around the north and south tailings storage locations that should be surveyed. Based on this information as well as the results of previous surveys and soil tests, the following work plans are proposed.

SITE SURVEY AND SOIL TESTING PLAN

This plan responds to commitments A and B. It consists of several sequential tasks which will follow standard protocols to produce completely documented, traceable, and reproducible results.

The first task will be a land survey to set up ground control for gamma measurements and soil sampling.

The next task will be determination of background gamma radiation and sampling for background soil Ra 226 tests.

The third task will be the gamma survey and soil sampling to delineate the extent of tailings contamination.

Land Survey

To perform the first task a licensed surveyor will survey and stake the ground control necessary to locate all gamma measurement and soil sampling points. Control and turning points will be set at permanent features or benchmarks so that the same control system can be used during cleanup activities and verification surveys. The surveyor will prepare a base map of the control system and survey grid.

Background Survey

The background survey will consist of gamma radiation measurements and sampling/testing of Mancos shale outcrops and natural soil around the storage areas. In the north area 10 background readings will be taken in the basal portions of the canyon walls, in the Mancos shale that also underlies the canyon floor. Radiological survey personnel will select locations for these background measurements that are removed or sheltered from tailings shine and that are otherwise undisturbed. Five soil samples will be collected from background gamma measurement locations and tested for moisture and concentrations of Ra 226, Th 234 and/or Unat, in accordance with the procedures of NUREG/CR 2954, to determine natural disequilibrium ratios in the background soils. The samples will be selected to represent the range of gamma readings found at the 10 background locations. The statistical means and standard deviations of all values (gamma, Ra 226 concentrations, and disequilibrium ratios) will be calculated and used to set the background values for the area.

As a related effort, samples of ore at ground surface around the site might also be sampled and tested to identify the gamma, Ra 226, and natural disequilibrium of the ore for use in distinguishing residual ore from tailings. Sampling and testing for natural disequilibrium will be necessary only if those distinctions become relevant.

In the south area background gamma measurements and soil sampling/testing will be performed in a similar manner. Ten locations of known natural materials, such as the bench cut and the basal portion of the mesa slope where the Mancos shale crops out, will be selected for gamma readings. Samples will be taken from half (five) of these locations for testing as described above.

All background locations will be marked by a stake, measured and plotted with respect to the survey grid. Field compass bearings and measured distances will relate the background locations to the survey grid and control points.

Contamination Survey

The areas to be surveyed for contamination include and extend beyond the limits of the two tailings storage areas, as delineated in Figure 1. The north area covers the canyon floor north of a line extending due west of the south edge of the quonset building, approximately 200-250 feet north of the section 7/18 boundary (see Figure 1). The south area extends from the foot of the mesa on the east, near the south vent hole, west to the fence line, and from the bench cut along the arroyo on the south to the east-west alignment of the power line on the north. For the entire north area a 100 foot square grid will be used for the gamma survey, and for the south area a 100 foot grid will extend over the entire area as described above and shown on Figure 1. A 16-line radial survey pattern will be centered on the middle of and extend from the outer limits of the 100 foot square grid in the south storage area.

Gamma measurements will be made at every node point in the 100 foot square grids and at 100 foot intervals along the radial patterns beyond the square grid in the south area. Each radial will be extended until two consecutive readings are within one standard deviation of the mean background gamma level for the south area. Using the procedure developed by the Bendix Corporation for the U.S. Department of Energy, these measurements will be correlated to soil radium concentrations to permit the gamma survey to delineate the areas requiring remediation.

At not fewer than 10 grid nodes in both storage areas, soil samples will be collected by bucket auger at 15 cm intervals to at least three feet depth. Sample locations will be selected by gamma survey personnel to represent the range of gamma readings obtained in each area. All samples will be split and approximately 20% of the splits will be sent to a second laboratory for quality assurance check against the results of the primary lab, which will test the first split of all samples for moisture, Ra 226 and Th 234 and/or Unat. Other properties such as ph could be useful in identifying tailings and might be tested, as well.

Statistical analyses of gamma measurements and soil test data will be performed to determine the means and standard deviations of the several parameters. If necessary, the ratios of Ra 226 to Th 234 or to Unat in background soil, and, if needed, in ore, will be calculated to compare with those of the tailings. These ratios will be the primary analytical means of distinguishing between tailings, natural soil, and ore. Therefore, both the means and the standard deviations of these ratios will be important. The most important relationship will be the correlation between radium concentration and gamma radiation. Regression analyses of these two parameters will provide the basis for delineating the areas and depths of soils requiring remediation as well as verification of adequate cleanup after remediation.

Methodologies

The gamma measurements will be made by Dr. Lyda Hersloff of REM using a micoR meter as described in the attached Field Gamma Survey Standard Operating Procedure. Sampling of soil, tailings, and ore will be in accordance with the attached Soil Sampling Standard Operating Procedure. The samples will be obtained by a contractor experienced in this type of work who will be under the supervision of either Dr. Hersloff or Dr. Alan Kuhn.

CANDIDATE CLEANUP METHODS

This portion of the plan responds to commitment C concerning identification of candidate cleanup methods. Possible cleanup methods can be divided into two categories - stabilization in place or removal to a licensed facility offsite.

Both the technical feasibility and cost of a cleanup method are heavily impacted by the quantity of tailings material that exceeds the allowable radium concentration limit. Therefore, until the surveys and soil testing are completed, Hecla cannot estimate the quantities closely enough to compare the candidate methods or to discuss their relative merits. The following descriptions of candidate methods are accordingly general.

Removal to Offsite Facility

Five licensed tailings disposal impoundments are located within 60 miles of the Johnny M Mine. However, only one is in operation at this time. Assuming that one or more of them would be willing to accept the Johnny M tailings and contaminated soil on reasonable terms, Hecla would excavate the contaminated materials delineated by the survey and truck them to the receiving facility.

Stabilization on Site

In terms of technical feasibility, the contaminated material can be stabilized in place regardless of quantity. Given the nature and history of the materials involved, Appendix A on its face provides some flexibility in defining and achieving regulatory compliance, making on-site stabilization a potentially reasonable and viable option. In light of this, three stabilization methods should be explored:

1. Stabilization In Place - In utilizing this method, the contaminated materials would remain where they are now and would be covered by soil. The soil cover would be designed to restrict radon emissions to acceptable levels and would be shaped and protected as necessary to resist erosion.

2. Concentration and Stabilization - If the contaminated soils are thinly distributed over a relatively large area, the preferred method could be movement of the material to one or two concentrated fill locations on the site. A fill location would be selected to minimize both risk of erosion and amount of soil and rock cover required for long-term stabilization.

3. Backfilling into Mine - Depending upon the volume of materials requiring cleanup, disposal of tailings through the site's north vent hole may be a feasible option. The accessible void in the mine needs to be evaluated to determine the quantity of tailings which could be placed.

If stabilization on site is used, Hecla will conduct field and laboratory investigations to characterize potential cover materials and their relevant properties. The stabilization design would consider protection against excess radon emissions and against erosion of the cover for events up to and including runoff from the one-hour PMP in the area.

Verification Survey

Regardless of the cleanup method selected, a gamma survey will be performed after cleanup to verify that the site conforms to requirements for radium levels attributable to tailings. The survey will be conducted over the same grid, with measurements taken at the same node points where excessive gamma readings (indicating excessive radium) were recorded in the contamination survey. No additional soil sampling will occur. Radium concentrations will be determined from the gamma-Ra 226 correlations established previously for delineation of the areas requiring cleanup. If the verification survey finds spots of residual contamination in excess of permissible limits, these spots will be delineated by gamma readings on a 30 foot square grid centered on the original node point and extending to the limit of excess gamma readings. After the necessary additional cleanup has been completed on such spots, another set of gamma measurements will be taken on the 30 foot grid to verify adequate cleanup.

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LLO Branch, LLWM
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40-8914/RSH/87/12/11/1

JAN 7 1988

URFO:RSH
Docket No. 40-8914
SUA-1482
04008914050E

Hecla Mining Company
6500 Mineral Drive
Box C-8000
Coeur d'Alene, Idaho 83814-1931

Gentlemen:

Enclosed is your upgraded Source Material License SUA-1482. This license incorporates the site survey aspects of your "Work Plan for Site Surveys and Cleanup" for the Johnny M Mine submitted by letter to the NRC dated October 16, 1987, and as discussed in the meeting between Hecla and NRC staff on September 15, 1987, at the Uranium Recovery Field Office.

This license reflects the current facility status and has therefore been reissued in its entirety.

This license was discussed and agreed to via telecon between Ms. Colleen D. Kelley and Mr. Ralph S. Heyer of my staff on January 6, 1988.

FOR THE NUCLEAR REGULATORY COMMISSION

/S/

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

Enclosure: Source Material License SUA-1482

Case Closed: 04008914050E

OFC	URFO	URFO	URFO	URFO
NAME	RSHeyer/db	PJGarcia	HJPettengill	ROSmith
DATE	88/01/07		1/6/88	1/7/88

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NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

PAGE 1 OF 1 PAGES

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee		
1. Hecla Mining Company	3. License number	SUA-1482
2. 6500 Mineral Drive P.O. Box C-8000 Coeur d'Alene, Idaho 83814-1931	4. Expiration date	Until NRC determines site reclamation is adequate.
	5. Docket or Reference No.	40-8914

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
Uranium byproducts	Any	Unlimited

9. Authorized place of use: The licensee's mine backfilling locations in McKinley County, New Mexico.

10. The licensee shall conduct pre-cleanup surveys at the Johnny M Mine site, in accordance with submittal entitled "Work Plan for Site Surveys and Cleanup" dated October 16, 1987. The results of the Site Survey and Soil Testing Plan shall be submitted to the USNRC Uranium Recovery Field Office by March 30, 1988.

11. The licensee shall submit, by April 15, 1988, in the form of an amendment application a proposed cleanup action plan or proposed stabilization plan based on the findings of the surveys required by Condition No. 10 to this license.

FOR THE NUCLEAR REGULATORY COMMISSION

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

Dated: JAN 7 1988

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CONC/40-8914

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JAN 7 1988

Hecla Mining Company

6500 Mineral Drive
P.O. Box C-8000
Coeur d'Alene, Idaho 83814-1931

SUA-1482

Until NRC determines site reclamation is adequate.

40-8914

Uranium byproducts	Any	Unlimited

9. Authorized place of use: The licensee's mine backfilling locations in McKinley County, New Mexico.

10. The licensee shall conduct pre-cleanup surveys at the Johnny M Mine site, in accordance with submittal entitled "Work Plan for Site Surveys and Cleanup" dated October 16, 1987. The results of the Site Survey and Soil Testing Plan shall be submitted to the USNRC Uranium Recovery Field Office by March 30, 1988.

11. The licensee shall submit, by April 15, 1988, in the form of an amendment application a proposed cleanup action plan or proposed stabilization plan based on the findings of the surveys required by Condition No. 10 to this license.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

Dated: JAN 7 1988

OFC	URFO	URFO	URFO	URFO			
NAME	RHeyer/db	PJGarcia	HJPettengill	RDSmith			
DATE	88/1/07	/	1/06/88	1/7/88			

URFO:DLJ
Docket No. 40-8914
SUA-1482
D40D8914D90E

MEMORANDUM FOR: William Brown, Regional Counsel
Region IV

THRU: A. Bill Beach, Director
Division of Radiation Safety and Safeguards
Region IV

FROM: Ramon E. Hall, Director
Uranium Recovery Field Office
Division of Radiation Safety and Safeguards
Region IV

SUBJECT: TERMINATION OF THE SOURCE MATERIAL LICENSE ISSUED TO HECLA MINING COMPANY FOR THE JOHNNY M MINE, SAN MATEO, NEW MEXICO

BACKGROUND

The Johnny M Mine located near San Mateo, New Mexico, was operated by Ranchers Exploration and Development (predecessor to Hecla) from early 1972 to late 1982. The mining sequence at the mine included backfilling of the mined-out areas with mill tailings returned to the site from the mill which processed the ore. To accomplish this, two surface injection locations were used for storage of the uranium tailings prior to disposal in the mine stopes. According to New Mexico records, these two areas covered approximately one acre at the north and one acre at the south injection site. The tailings were slurried and then pumped into the mine to prevent caving and "reduce the vulnerability of possible breaks in the integrity of the Dakota aquifer located above the mine." An estimated 286,000 tons of tailings were injected into the mine. Disposal depths ranged from 1134 feet to 1148 feet and from 1162 feet to 1183 feet below the surface (using the shaft for datum) or about 1100 to 1300 feet underground, depending on the terrain.

Reclamation of the mine property began in early 1982. The mine shaft was sealed with a four foot thick water ring reinforced concrete plug set between the Dakota and the Westwater members of the formation. The portal was sealed

URFO:PM	URFO:DD	URFO:D:RIV
DLJacoby/dlj	EFHawkins	REHall
12/18/90	12/21/90	12/21/90

with a 12-inch thick reinforced concrete plug, and a 20-inch diameter capped steel pipe was set in the concrete. The surface was then covered with earthen materials during site recontouring. The location of the shaft is not presently obvious due to the revegatated surface.

DISCUSSION

By letter dated September 28, 1988, Hecla requested an amendment to their licence to incorporate their proposed reclamation plan. The reclamation for the site consists of cleanup of the remaining surface contaminatation to appropriate standards, and leaves the underground tailings undisturbed. The contaminated material will be transported to and disposed of at the Quivira Mining Company's Pond 2 disposal area. After several revisions to the proposed plan, NRC was in agreement with the proposed cleanup plan submitted May 4, 1990, and an amendment was issued on October 12, 1990.

By letter dated October 18, 1990, Hecla requested that NRC terminate their license after the cleanup (reclamation) of the surface is complete. We are requesting that you review the situation and indicate if NRC will be able to terminate the license upon successful completion of the surface cleanup.

Issues to Consider

1. The siting criteria discussed in 10 CFR 40, Appendix A, Criterion 1 is met by underground disposal. Criterion 3 sets the "prime option" for disposal of tailings below grade in mines.

2. The Appendix A Criteria 4 and 6 controlling the attenuation of radon releases and the erosion protection design would not be applicable at the site after cleanup is completed as there would be no tailings remaining on the surface to protect.

3. The risk to workers would clearly be greater than the benefit to the public health and safety if cleanup of the buried tailings were required. The exception to this could possibly be the issue of ground water. The milling process produces fine grain tailings which have a greater surface area than the former ore. This allows trace metals, residual radionuclides, as well as anions and cations to easily go into solution. If necessary, NRC may want to consider application of supplement standards similar to those applied at Title I sites. Hecla has indicated that no shallow ground water has been identified at the site. Piezometric depth to the primary aquifer is reportedly 800 feet. The distance between the tailings filled stopes and the overlying Dakota aquifer is reportedly 130 to 150 feet. The mine reportedly is separated from the aquifer by a confining bed of "bentonitic clays."

4. The land owner is reportedly reluctant to sell the land. Therefore, Hecla does not propose to turn the land over to the government. Criterion 11 may provide for this situation by including an exclusion to title: "In some rare cases, such as may occur with deep burial where no ongoing site

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40-8914

Hecla
MINING COMPANY
Centennial
1891 - 1991

May 29, 1992

Mr. Ramon E. Hall
United States Nuclear Regulatory Commission
Region IV
Uranium Recovery Field Office
P.O. Box 25325
Denver, Colorado 80225

RE: License SUA-1482, Johnny M Site Reclamation

Dear Mr. Hall:

The NRC conducted an on-site inspection of the Johnny M Mine on March 12, 1992. The results of this inspection were reported to Hecla in the NRC's letter dated May 20, 1992.

The NRC identified an area west of the fence in the south area as needing additional cleanup. Additional cleanup was conducted in this area on April 30, 1992. The cleanup was guided by gamma measurement. Cleanup was conducted until all of the area in question was below 20 uR/hr. (A gamma measurement of 20 uR/hr was obtained in an area known to contain less than 5 pCi/g radium-226 on the day of cleanup.) Cleanup of the area to an acceptable radium-226 level was confirmed by collecting six soil samples and analyzing for radium-226. All samples were collected to a six inch depth and composited into two samples (three grab samples per composite). Compositing of the grab samples was conducted by the analytical laboratory. The analytical results of 1.2 ± 0.9 pCi/g and 0.8 ± 0.8 pCi/g indicates that the cleanup effort was successful. Also, as an ALARA function, additional cleanup was conducted in the two areas where soil samples JMM-15 and JMM-16 were collected by Mr. Ward of your staff. Approximately 75 yd^3 of soil was removed from the site and transported to Quivira Mining Company for disposal.

Very truly yours,

Gary R. Gamble
Environmental Engineer

Attachments

cc: Larry Drew - HMC
George Wilhelm - HMC
Alan Kuhn - AKG

Add Info
92-0500

6500 Mineral Drive • Box C-8000 • Coeur d'Alene, Idaho 83814-1931 • 208/769-4100 • FAX 208/769-4107

with a 12-inch thick reinforced concrete plug, and a 20-inch diameter capped steel pipe was set in the concrete. The surface was then covered with earthen materials during site recontouring. The location of the shaft is not presently obvious due to the revegatated surface.

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2. The Appendix A Criteria 4 and 6 controlling the attenuation of radon releases and the erosion protection design would not be applicable at the site after cleanup is completed as there would be no tailings remaining on the surface to protect.

3. The risk to workers would clearly be greater than the benefit to the public health and safety if cleanup of the buried tailings were required. The exception to this could possibly be the issue of ground water. The milling process produces fine grain tailings which have a greater surface area than the former ore. This allows trace metals, residual radionuclides, as well as anions and cations to easily go into solution. If necessary, NRC may want to consider application of supplement standards similar to those applied at Title I sites. Hecla has indicated that no shallow ground water has been identified at the site. Piezometric depth to the primary aquifer is reportedly 800 feet. The distance between the tailings filled stopes and the overlying Dakota aquifer is reportedly 130 to 150 feet. The mine reportedly is separated from the aquifer by a confining bed of "bentonitic clays."

4. The land owner is reportedly reluctant to sell the land. Therefore, Hecla does not propose to turn the land over to the government. Criterion 11 may provide for this situation by including an exclusion to title: "In some rare cases, such as may occur with deep burial where no ongoing site

ENCLOSURE 2

JOHNNY M MINE AREA SUPERFUND SITE
INFORMATION REQUEST

INSTRUCTIONS and DEFINITIONS

INSTRUCTIONS

1. Please provide a separate narrative response for each and every Question and subpart of a Question set forth in this Information Request.

2. Precede each answer with the Question (or subpart) and the number of the Question (and the letter of a subpart of a Question, if applicable) to which it corresponds.

3. If information or documents not known or not available to you as of the date of submission of a response to this Information Request should later become known or available to you, ***you must supplement*** your response to the U.S. Environmental Protection Agency (EPA). Moreover, should you find, at any time, after submission of your response, that any portion of the submitted information is false or misrepresents the truth, or, though correct when made, is no longer true, you must notify EPA of this fact as soon as possible and provide EPA with a corrected response.

4. For each document produced in response to this Information Request, indicate on the document, or in some other reasonable manner, the number of the Question (and the letter of a subpart of a Question, if applicable) to which it responds.

5. You may assert a business confidentiality claim covering part or all of the information which you submit in response to this request. Any such claim must be made by placing on (or attaching to) the information, at the time it is submitted to EPA, a cover sheet or a stamped or typed legend or other suitable form of notice employing language such as "trade secret," "proprietary," or "company confidential." Confidential portions of otherwise non-confidential documents should be clearly identified and may be submitted separately to facilitate identification and handling by EPA. If you make such a claim, the information covered by that claim will be disclosed by EPA only to the extent, and by means of the procedures, set forth in subpart B of 40 CFR Part 2. If no such claim accompanies the information when it is received by EPA, it may be made available to the public by EPA without further notice to you. The requirements of 40 CFR Part 2 regarding business confidentiality claims were published in the Federal Register on September 1, 1976, and were amended September 8, 1976, and December 18, 1985.

6. Personal Privacy Information. Personnel and medical files, and similar files the disclosure of which to the general public may constitute an invasion of privacy should be segregated from your responses, included on separate sheet(s), and marked as "Personal Privacy Information."

7. Objections to questions. If you have objections to some or all the questions within the Information Request Letter, you are still required to respond to each of the questions.

DEFINITIONS

The following definitions shall apply to the following words as they appear in this enclosure:

1. The terms "and" and "or" shall be construed either disjunctively or conjunctively as necessary to bring within the scope of this Information Request any information which might otherwise be construed to be outside its scope.

2. The term "any", as in "any documents" for example, shall mean "any and all."

3. The term "arrangement" means every separate contract or other agreement between two or more persons.

4. The terms "document(s)" and "documentation" shall mean any object that records, stores, or presents information, and includes writings of any kind, formal or informal, whether or not wholly or partially in handwriting, including by way of illustration and not by way of limitation, any invoice, manifest, bill of lading, receipt, endorsement, check, bank draft, canceled check, deposit slip, withdrawal slip, order, correspondence, record book, minutes, memorandum of telephone and other conversations including meetings, agreements and the like, diary, calendar, desk pad, scrapbook, notebook, bulletin, circular, form, pamphlet, statement, journal, postcard, letter, telegram, telex, telecopy, telefax, report, notice, message, analysis, comparison, graph, chart, map, interoffice or intra office communications, photostat or other copy of any documents, microfilm or other film record, any photograph, sound recording on any type of device, any punch card, disc pack; any tape or other type of memory generally associated with computers and data processing (together with the programming instructions and other written material necessary to use such punch card, disc, or disc pack, tape or other type of memory and together with the printouts of such punch card, disc, or disc pack, tape or other type of memory); and (a) every copy of each document which is not an exact duplicate of a document which is produced, (b) every copy which has any writing, figure or notation, annotation or the like on it, (c) drafts, (d) attachments to or enclosures with any document and (e) every document referred to in any other document.

5. The term "identify" means, with respect to a natural person, to set forth the person's name, present or last known business and personal addresses, email address(es), and telephone numbers, and present or last known job title, position or business. Also provide e-mail addresses.

6. The term "identify" means, with respect to a corporation, partnership, business trust or other association or business entity (including, but not limited to, a sole proprietorship), to set forth its full name, address, and legal form (e.g. corporation [including state of incorporation], partnership, etc.), organization, if any, a brief description of its business, and to indicate whether or not it is still in existence and, if it is no longer in existence, to explain how its existence was terminated and to indicate the date on which it ceased to exist. Also provide e-mail addresses.

7. The term "identify" means, with respect to a document, to provide the type of document,

to provide its customary business description, its date, its number, if any (invoice or purchase order number), subject matter, the identity of the author, addressor, addressee and/or recipient, and the present location of such document.

8. The term "person" shall have the same definition as in Subsection 101 (21) of CERCLA, 42 U.S.C. § 9601 (21).

9. The term "Site" shall mean and include the Johnny M Mine Area Superfund Site, both before and after EPA response action under CERCLA.

10. The term "Hecla" shall mean and include Hecla Mining Company, its' predecessors and subsidiaries, and/or any other Hecla companies.

11. The term "you" or "Respondent" shall mean the addressee of this Request, the addressee's officers, managers, employees, contractors, trustees, partners, successors and agents.

12. Words in the masculine shall be construed in the feminine, and vice versa, and words in the singular shall be construed in the plural, and vice versa, where appropriate in the context of a particular question or questions as necessary to bring within the scope of this Information Request any information which might otherwise be construed to [illegible] its scope.

13. All terms not defined herein shall have their ordinary meaning, unless such defined in CERCLA, RCRA, 40 CFR Part 300 or 40 CFR Parts 260-280, i the statutory or regulatory definitions shall apply.

ENCLOSURE 3

JOHNNY M MINE AREA SUPERFUND SITE
INFORMATION REQUEST

QUESTIONS

1. Identify the person(s) that provide the answers to the questions below on behalf of the Hecla Mining Company (Hecla).

2. State the date on which Hecla acquired ownership and/or an interest in Ranchers Exploration and Development (Ranchers) and the Johnny M Mine. Submit a copy of all documents relating to Hecla's purchase of, or merger with, Ranchers.

3. Identify and describe any portion of the Johnny M Mine or assets at the Johnny M Mine owned, operated, leased, or mined or explored by the Respondent, and the dates during which the Site was owned operated, leased, mined, or explored, including areas where borings were taken and provide copies of all documents evidencing or relating to such ownership, operation, or lease, including but not limited to purchase and sale agreement, royalty payments, deeds, and leases including mining leases, and gravel and tailings leases.

4. Identify and describe any portion of the Johnny M Mine or assets at the Johnny M Mine owned, operated, leased, or mined or explored by the Ranchers, and the dates during which the Site was owned operated, leased, mined, or explored, including areas where borings were taken and provide copies of all documents evidencing or relating to such ownership, operation, or lease, including but not limited to purchase and sale agreement, royalty payments, deeds, and leases including mining leases, and gravel and tailings leases.

5. Provide copies of any agreements, leases, and/or contracts entered into by Ranchers and/or Hecla regarding the use of mill tailings as backfill.

6. Provide copies of all current and historical laboratory or field analyses of the water quality of the aquifers, mine water, surface water, tailing pond discharges and receiving streams, air quality and soil quality, including sampling locations of all such samples for the Site.

7. Identify the location and custodian of all known records pertaining to the Johnny M Mine's operation, including but not limited to, licenses, permits, reclamation plans, reports, and studies.

to provide its customary business description, its date, its number, if any (invoice or purchase order number), subject matter, the identity of the author, addressor, addressee and/or recipient, and the present location of such document.

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